CENTER FOR HEALTH INFORMATION AND ANALYSIS

HOSPITAL-WIDE ADULT ALL-PAYER READMISSIONS

IN MASSACHUSETTS: SFY 2011-2016

MAY 2018

CHIA

Executive Summary

Unplanned hospital readmissions, many of which may be preventable, are costly and may adversely impact patient health and experience of care. Massachusetts has historically had readmission rates higher than the national average. Under the Centers for Medicare and Medicaid Services (CMS) Hospital Readmissions Reduction Program, CMS penalized 91% of the Commonwealth's hospitals for having higher than expected readmission rates in Federal Fiscal Year (FFY) 2018. Both the percentage of hospitals fined and the average level of fines imposed are greater in Massachusetts than in most other states.[1]

To monitor readmissions in the Commonwealth, the Massachusetts Statewide Quality Advisory Committee in 2012 adopted the Yale/CMS Hospital-Wide All-Cause Unplanned 30-day Readmission Measure for the Commonwealth's Standard Quality Measure Set.[2] The Center for Health Information and Analysis (CHIA) adapted the Yale/CMS measure, originally developed for use with the Medicare population,[3] for an all-payer population. The readmission analyses presented in this report are based on data from CHIA's Hospital Inpatient Discharge Database.[4]

This report, the fourth in CHIA's annual series of all-payer readmission reports, updates previous reports with State Fiscal Year (SFY) 2016 data and presents statewide trends in readmission rates from SFY 2011 to 2016.

Key Findings

- The unplanned, all-payer readmission rate for Massachusetts acute care hospitals was 15.9% in SFY 2016—the same rate as in the previous year.
- When accounting for case mix and service mix, the risk-standardized readmission rates (RSRRs) for hospitals varied widely from 13.6% to 18.1%.
- Medicare and Medicaid insured patients have the highest readmission rates (18.0% and 17.1%, respectively) across payer types. These public payer groups collectively account for 83% of all readmissions in the Commonwealth.
- The proportion of readmissions contributed by commercially insured patients is substantially lower (15%) as is the corresponding rate of readmission (10.3%).
- Academic and teaching hospitals dominate the list of hospitals with consistently high risk-standardized readmission rates over the past five years.
- Readmission rates among patients discharged to post-acute care settings are substantially higher than among patients discharged to home without services.

Contents

Introduction

Unplanned hospital readmissions, many of which may be preventable, are costly and may adversely impact patient health and experience of care. In an effort to address this issue, the Centers for Medicare and Medicaid Services (CMS) instituted the Hospital Readmissions Reduction Program (HRRP) as part of the Affordable Care Act in 2012. Now in its sixth year, the program incentivizes hospitals to reduce unplanned readmissions by imposing financial penalties of up to three percent per year for hospitals that have higher than expected readmission rates among their Medicare patients. In Federal Fiscal Year (FFY) 2018 (October 2017 to September 2018), 91% of Massachusetts hospitals were penalized for higher than expected readmission rates. On average, Massachusetts hospitals were penalized 0.84% of their total Medicare reimbursements for FFY 2018 under HRRP, a five percent increase from the previous year. Both the percentage of hospitals fined (91%) and the average level of penalty imposed (0.84% of Medicare reimbursements) are higher in Massachusetts than in most other states.[5]

To monitor readmissions in the Commonwealth, the Massachusetts Statewide Quality Advisory Committee in 2012 adopted the Yale/CMS Hospital-Wide All-Cause Unplanned 30-day Readmission Measure for the Commonwealth's Standard Quality Measure Set.[6] Though initially developed for use with the Medicare population, the Center for Health Information and Analysis (CHIA) adapted the Yale/CMS measure for an all-payer population.[7] The readmission analyses presented in this report were conducted using CHIA's Hospital Inpatient Discharge Database.[8] An analysis of statewide and hospital-specific all-payer, all-cause readmission rates provides the public, providers, and policymakers a complete view of adult readmissions in the Commonwealth of Massachusetts. An all-payer analysis is helpful as strategies to control the growing cost of health care remain public policy priorities in Massachusetts.

This report is the fourth in CHIA's annual series of readmission reports. This year's report includes a new analysis on the average length of stay for hospital admissions, updates previous reports with State Fiscal Year (SFY) 2016 data, and reports on trends in readmission rates from SFY 2011 to 2016 (July 2010 through June 2016). Please note that this year's report uses version 6.0 of the CMS readmissions measure methodology (2017), which updates the planned readmissions algorithm and takes into account the transition from ICD-9-CM to ICD-10-CM codes in October 2015.[9] The historical figures presented in this report were recalculated using version 6.0 and thus will not exactly match those from earlier reports.

Section I presents the overall trends in statewide all-payer readmissions for the past six years; section II examines readmissions by characteristics of patients and hospitalizations such as age and expected payer type; and section III provides readmission rates for individual hospitals and groupings of hospitals such as hospital cohorts and hospital systems.

Overall Trends in All-Payer Readmissions

This section presents the overall trend in all-payer readmissions for acute care hospitals in Massachusetts for the six-year study period spanning July 1, 2010 to June 30, 2016. A readmission is defined as an unplanned hospitalization for any reason within 30 days of an eligible discharge. The measure excludes certain categories of hospitalizations from consideration, such as obstetric and primary psychiatric admissions.

This report presents readmission rates as both observed and risk-standardized figures. Observed or "raw" readmission rates are calculated as the number of readmissions that occurred in a year as a proportion of all discharges eligible for inclusion in the measure during that year. With observed hospital readmission rates, some portion of differences among hospitals may be attributable to differing service mix and patient case mix. However, these unadjusted rates are still useful for identifying opportunities for improvement and tracking performance over time within individual hospitals. Unless otherwise noted, the readmission rates presented in this report are observed or "raw" readmission rates.

The risk-standardized readmission rates (RSRRs) presented are adjusted observed rates calculated for hospitals and for groups of hospitals. RSRRs take into account the differences across hospitals in patient age, patient comorbidities, and the profile of conditions that each hospital treats and allow for a more accurate comparison across hospitals.

Key Findings

- The observed readmission rate was 15.9% in SFY 2016. Rates have been relatively stable over the six-year study period.
- The RSRRs for hospitals had more variability in 2016 compared to 2015, ranging from a low of 13.6% to a high of 18.1%.
- Hospitalizations that led to a subsequent readmission had a 32% longer average length of stay (ALOS).

OVERALL TREND

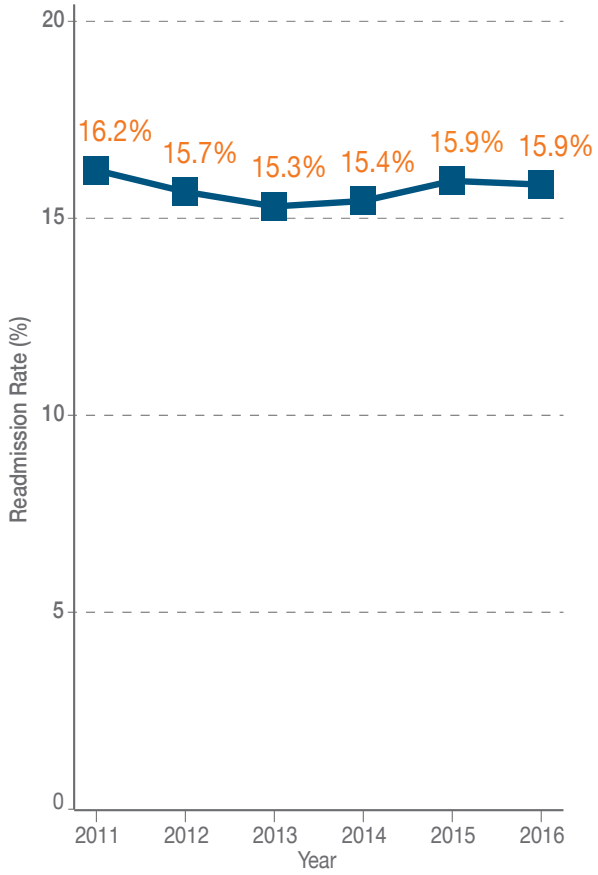
Trends in Statewide All-Payer Readmission Rate, Discharges, and Readmissions

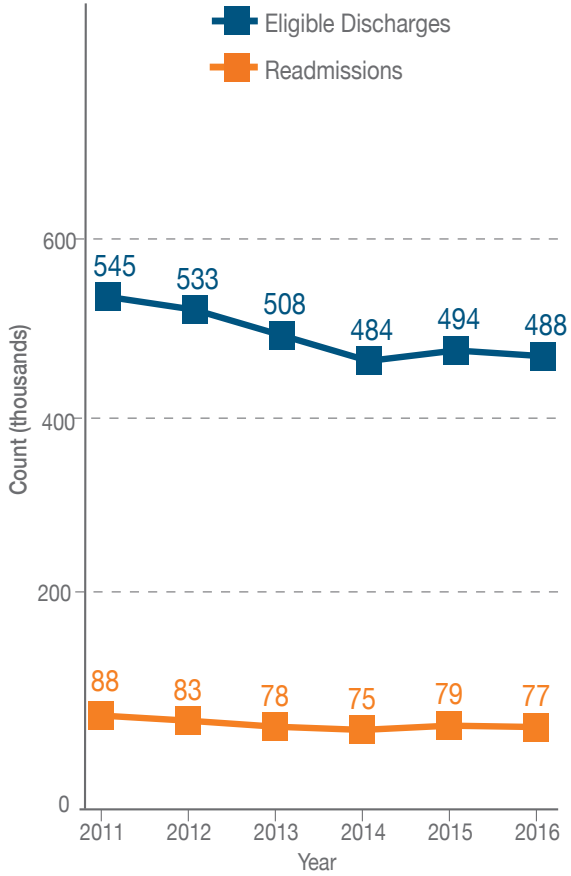
SFY 2011-2016

Statewide, the observed readmission rate remained steady at 15.9% in SFY 2016. Readmission rates have been relatively stable over the six-year period with a range of 15.3% to 16.2%.

The statewide number of eligible inpatient discharges decreased slightly from 493,884 in 2015 to 488,418 in 2016.

The total number of statewide, all-payer readmissions also decreased slightly from 78,769 in 2015 to 77,443 in 2016.





Note: Since this report uses an updated planned readmissions algorithm, readmission rates may not exactly match those from earlier reports. Analyses include eligible discharges for adults with any payer, excluding discharges for obstetric or primary psychiatric care.

Data Source: Massachusetts Hospital Inpatient Discharge Database, July 2010 to June 2016.

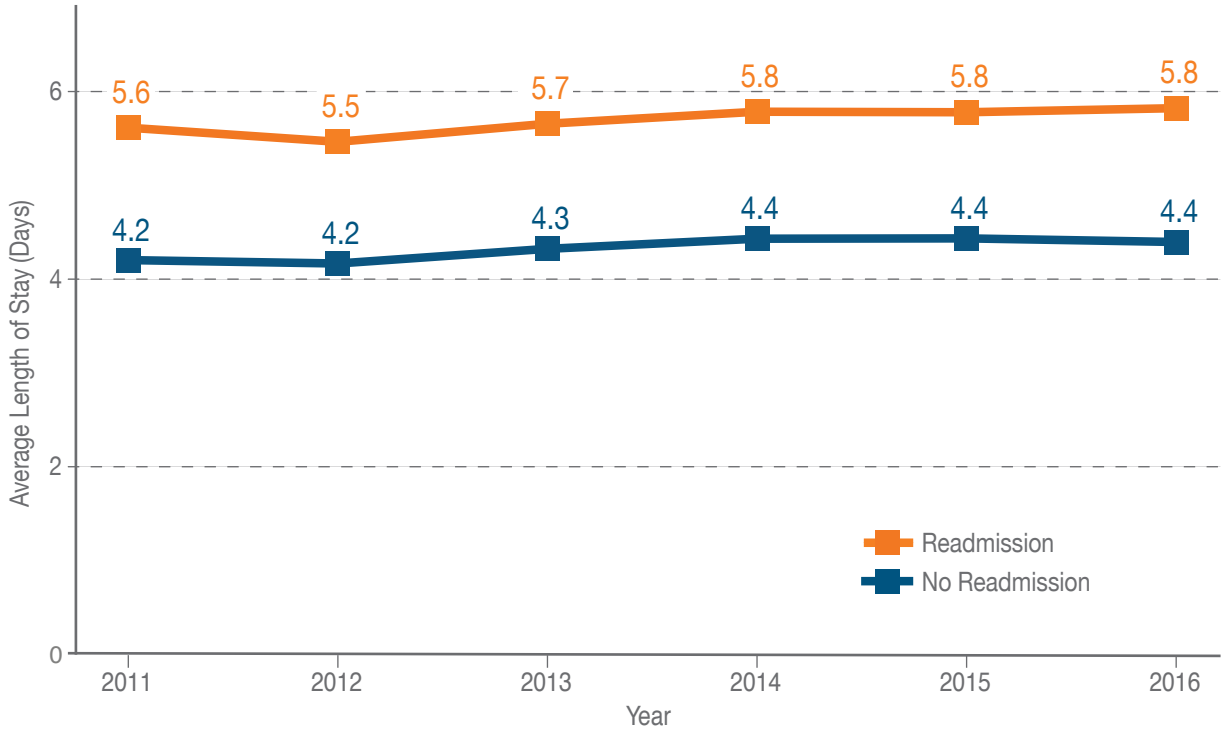
OVERALL TREND

Trend in Average Length of Stay (ALOS) by Readmission Status

SFY 2011-2016

In SFY 2016, the average length of stay (ALOS) was 32% longer for eligible discharges with a subsequent readmission (5.8 days) compared to those with no readmission (4.4 days).

The trends in ALOS for those readmitted and not readmitted were stable within a very narrow range over the six-year period from SFY 2011 to SFY 2016.



Note: The average length of stay (ALOS) was calculated as the difference in the number of days between the discharge date and the admission date. For details, please see the technical appendix. Analyses include eligible discharges for adults with any payer, excluding discharges for obstetric or primary psychiatric care.

Data Source: Massachusetts Hospital Inpatient Discharge Database, July 2010 to June 2016.

OVERALL TREND

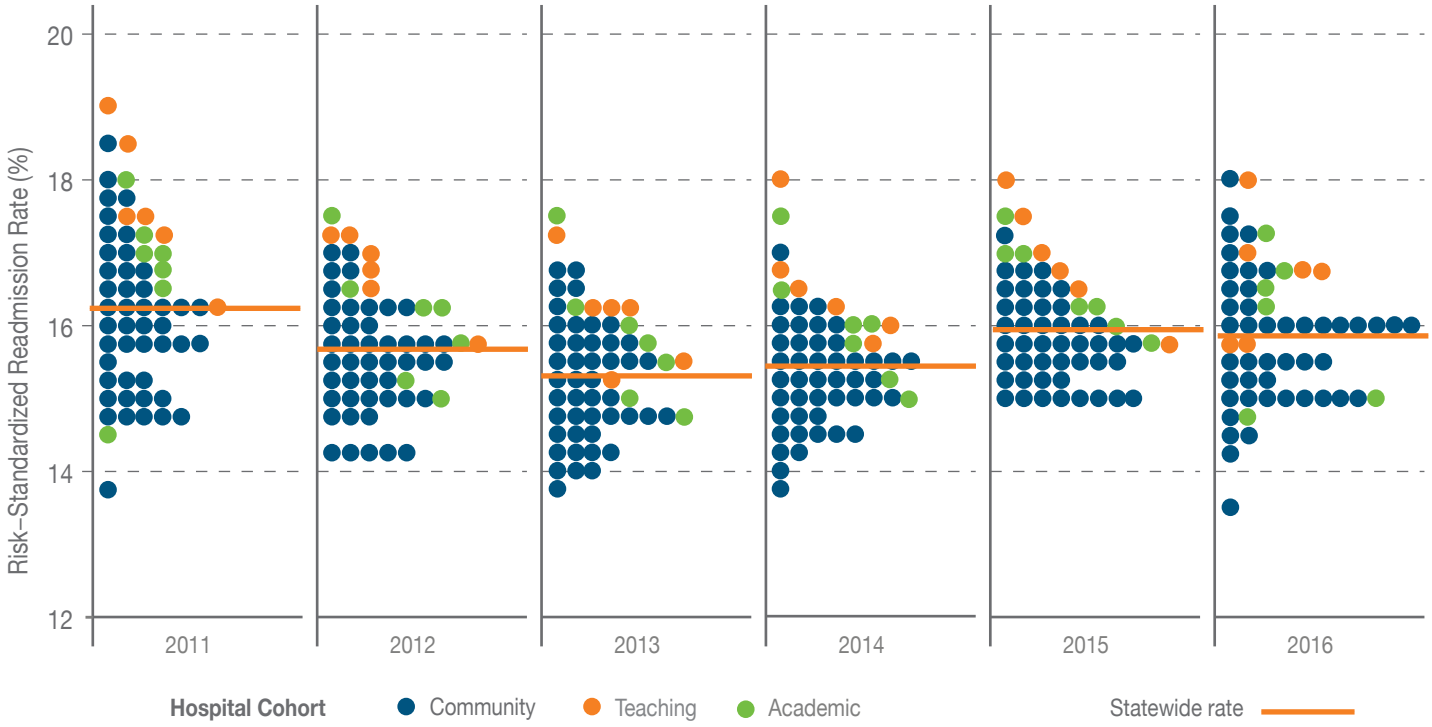
Distribution of Hospital Risk-Standardized Readmission Rates by Year

SFY 2011-2016

Hospital-specific RSRRs account for differences among hospitals in the patients they treat and the services they provide.

From 2011 to 2013, the distribution of hospitals' RSRRs shifted downward (readmission rates declined), and the hospitals' rates became more tightly concentrated. The distribution remained relatively constant from 2013 to 2014 before shifting upward in 2015 when there were fewer hospitals with lower rates.

The RSRRs for hospitals had more variability in 2016, compared to 2015, with a range of 13.6% to 18.1%.



Note: Each dot in this figure represents a hospital. The figure excludes the two specialty hospitals, Massachusetts Eye and Ear Infirmary and New England Baptist Hospital. This figure shows risk-standardized readmission rates that account for patient case mix and hospital service mix. The analysis includes eligible discharges for adults with any payer, excluding discharges for obstetric or primary psychiatric care.

Data Source: Massachusetts Hospital Inpatient Discharge Database, July 2010 to June 2016.

All-Payer Readmissions by Characteristics of Patients and Hospitalizations

This section presents observed readmission rates by several characteristics of patients and hospitalizations, such as patient age, expected payer type, and discharge setting. In addition, readmissions among patients who were frequent users of inpatient services are examined.

Key Findings

- Medicare and Medicaid accounted for 83% of all readmissions in SFY 2016. Readmission rates for Medicare (18.0%) and Medicaid (17.1%) patients were substantially higher than for commercially insured patients (10.3%).
- When examined by payer type and age, Medicare beneficiaries under age 65 had the highest readmission rate (22.4%). These beneficiaries typically qualify because of a disability and are often dually eligible for Medicare and Medicaid.
- Readmission rates for adults increase with age. Readmission rates for older adults (age 75+) have trended downward over the six-year study period, while readmission rates for young adults (age 18-24) have slowly trended upward.
- Readmission rates for patients discharged to skilled nursing facilities (20.1%), rehabilitation (19.1%), and home with home care (18.0%) are substantially higher than readmission rates for patients discharged to home (12.6%).
- The top 10 conditions that account for the most readmissions cumulatively represent only 34% of all readmissions. While it is important to focus on these high volume conditions in readmission reduction efforts, an exclusive focus on them would miss two-thirds of all readmissions.
- Sepsis surpassed heart failure as the condition associated with the highest number of statewide readmissions (5,108 versus 5,084, respectively) in 2016.
- Frequently hospitalized patients, defined as those with four or more hospitalizations in any 12-month period from SFY 2014 to 2016, constituted only seven percent of the patient population but accounted for 25% of hospitalizations and 58% of readmissions.

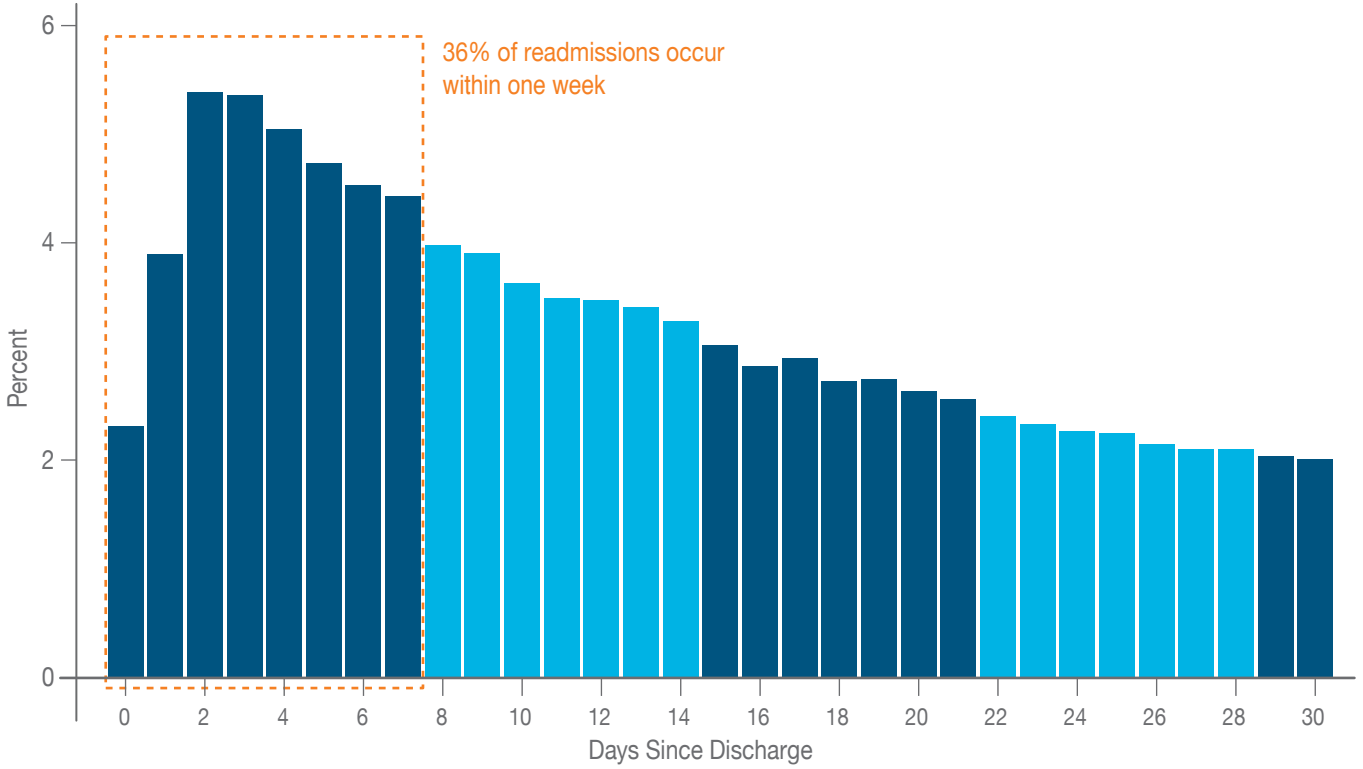
STATEWIDE READMISSIONS

All-Payer Readmissions by Days Since Discharge

SFY 2016

Any unplanned admission within 30 days of an eligible discharge is counted as a readmission. Therefore, readmissions may occur at any point within the 30-day period following an eligible discharge.

Readmissions peak at two days after an initial discharge and decline steadily thereafter. More than one-third of readmissions (36%) occurred in the first week following a discharge.



Note: Analyses include eligible discharges for adults with any payer, excluding discharges for obstetric or primary psychiatric care.

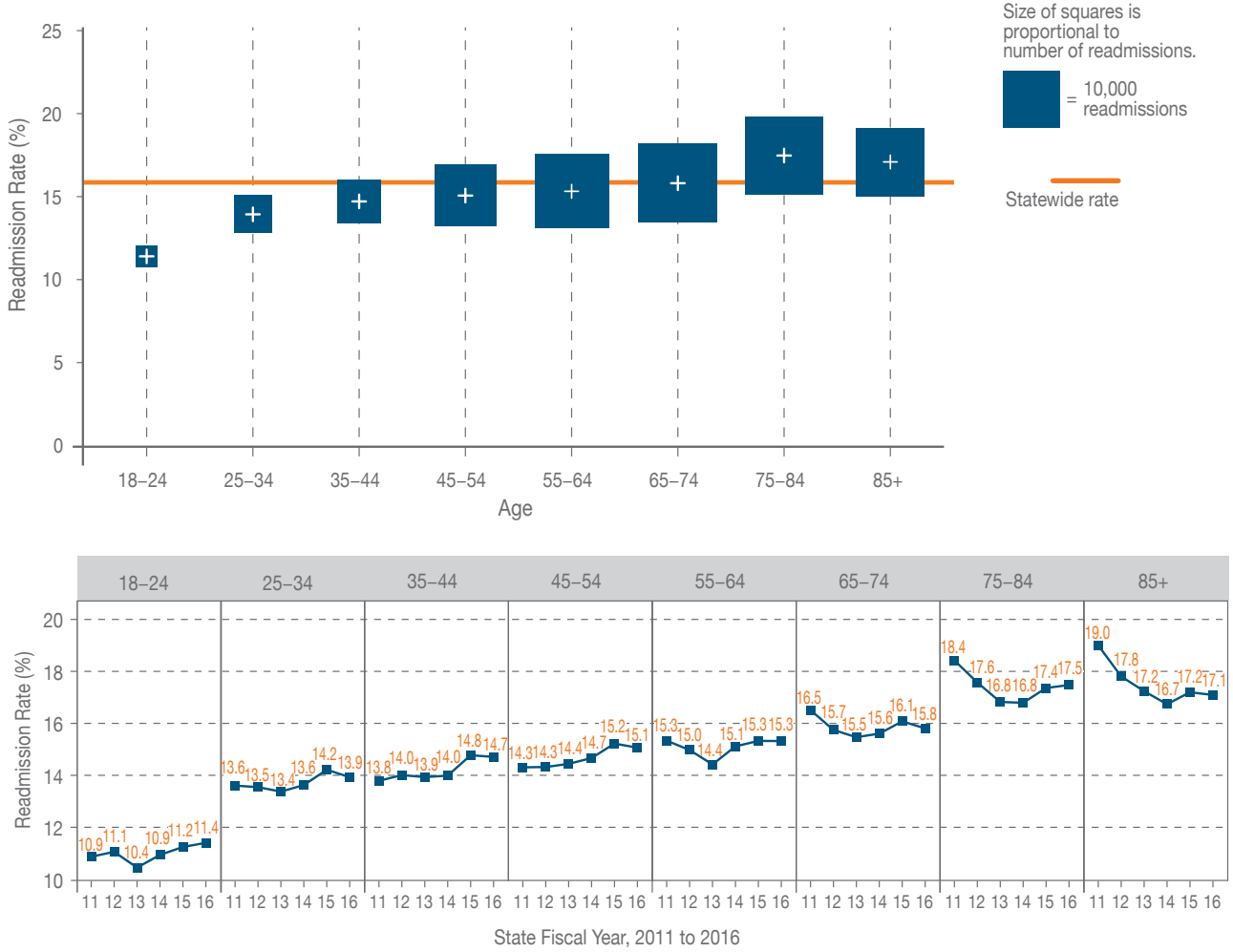
Data Source: Massachusetts Hospital Inpatient Discharge Database, July 2015 to June 2016.

All-Payer Readmissions by Patient Age

SFY 2016

Readmission rates and the total number of readmissions increase steadily with age. Patients over age 65 accounted for 57% of readmissions, and patients under age 65 accounted for 43% of all readmissions in SFY 2016.

Over the six-year period from SFY 2011 to SFY 2016, readmission rates trended downward for older adults (age 75+) while they stayed within a narrow range for other age groups (age 25-74). For young adults (age 18-24), there has been a net increase in readmission rates from 2011 to 2016 with a continuous upward trend since 2013.



Note: The size of the squares in the top figure is proportional to the number of readmissions. Analyses include eligible discharges for adults with any payer, excluding discharges for obstetric or primary psychiatric care.

Data Source: Massachusetts Hospital Inpatient Discharge Database, July 2010 to June 2016.

STATEWIDE READMISSIONS

All-Payer Readmissions by Payer Type

SFY 2016

In 2016, readmission rates for Medicare and Medicaid patients (18.0% and 17.1%, respectively) were substantially higher than the rate for commercial patients (10.3%).

Medicare accounted for 68% of all readmissions statewide and Medicaid accounted for 15% of all readmissions. Together, patients covered by public payers accounted for 83% of all readmissions.

The bottom figure shows trends in readmission rates over time for the three major payer types.

Medicare and Medicaid readmission rates have decreased over the six-year period. Readmission rates for commercially insured patients have remained stable.

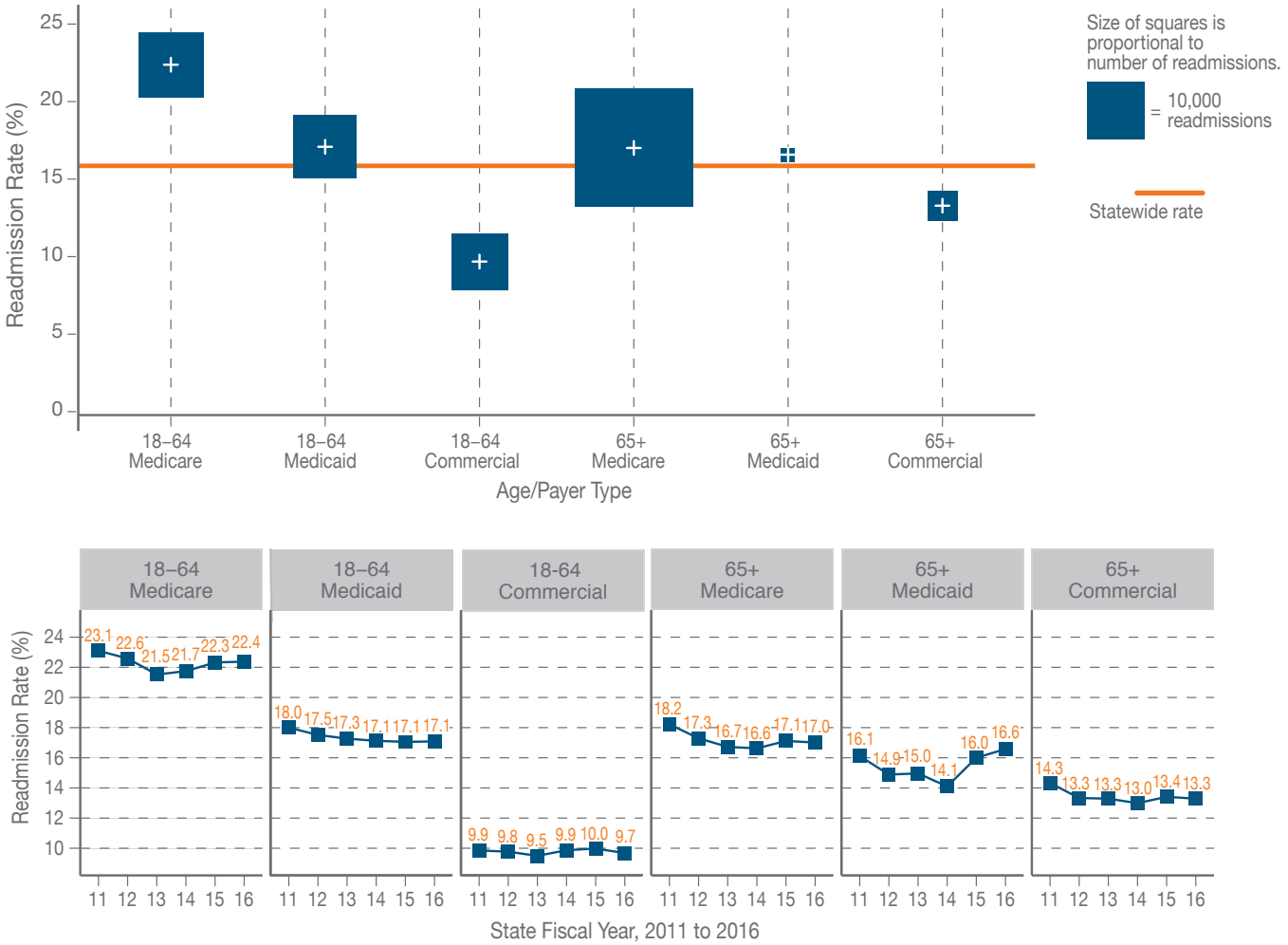
Note: The size of the squares in the top figure is proportional to the number of readmissions. Analyses include eligible discharges for adults with any payer, excluding discharges for obstetric or primary psychiatric care.

Data Source: Massachusetts Hospital Inpatient Discharge Database, July 2010 to June 2016.

All-Payer Readmissions by Patient Age and Payer Type

SFY 2016

Medicare beneficiaries, age 18 to 64 had the highest rate of 30-day readmissions (22.4%). Though there are substantial differences in readmission rates for adults 18-64 (9.7%-22.4%) when examined by payer type, differences in readmission rates are more narrow for adults over age 65 (13.3%-17.0%).



Note: The size of the squares in the top figure is proportional to the number of readmissions. Analyses include eligible discharges for adults with any payer, excluding discharges for obstetric or primary psychiatric care.

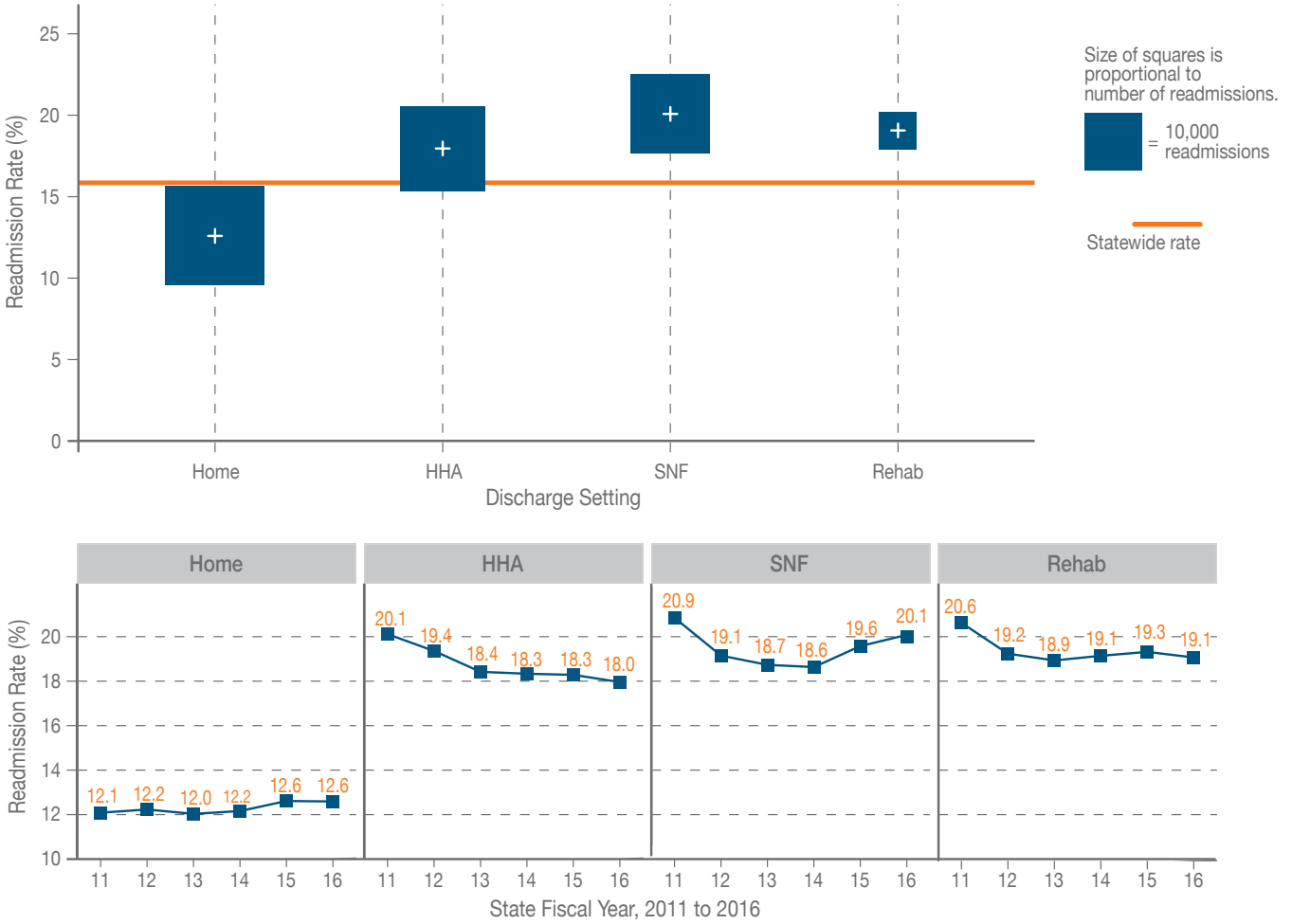
Data Source: Massachusetts Hospital Inpatient Discharge Database, July 2010 to June 2016.

All-Payer Readmissions by Discharge Setting

SFY 2016

The readmission rate for patients discharged to home (12.6%) was lower compared to those discharged to the post-acute care settings: home health agency (HHA) care (18.0%), skilled nursing facility (SNF) (20.1%), or rehabilitation (19.1%).

The trends in readmission rates show different patterns by discharge setting. Readmission rates for patients discharged to HHA and rehabilitation have declined over the six-year study period. Readmission rates for patients discharged to skilled nursing facilities declined from 2011 to 2014, but have since trended upward.



Note: The size of the squares in the top figure is proportional to the number of readmissions. HHA = home with home health agency care, SNF = skilled nursing facility. Hospice discharges were not included due to its small number of discharges. Analyses include eligible discharges for adults with any payer, excluding discharges for obstetric or primary psychiatric

Data Source: Massachusetts Hospital Inpatient Discharge Database, July 2010 to June 2016.

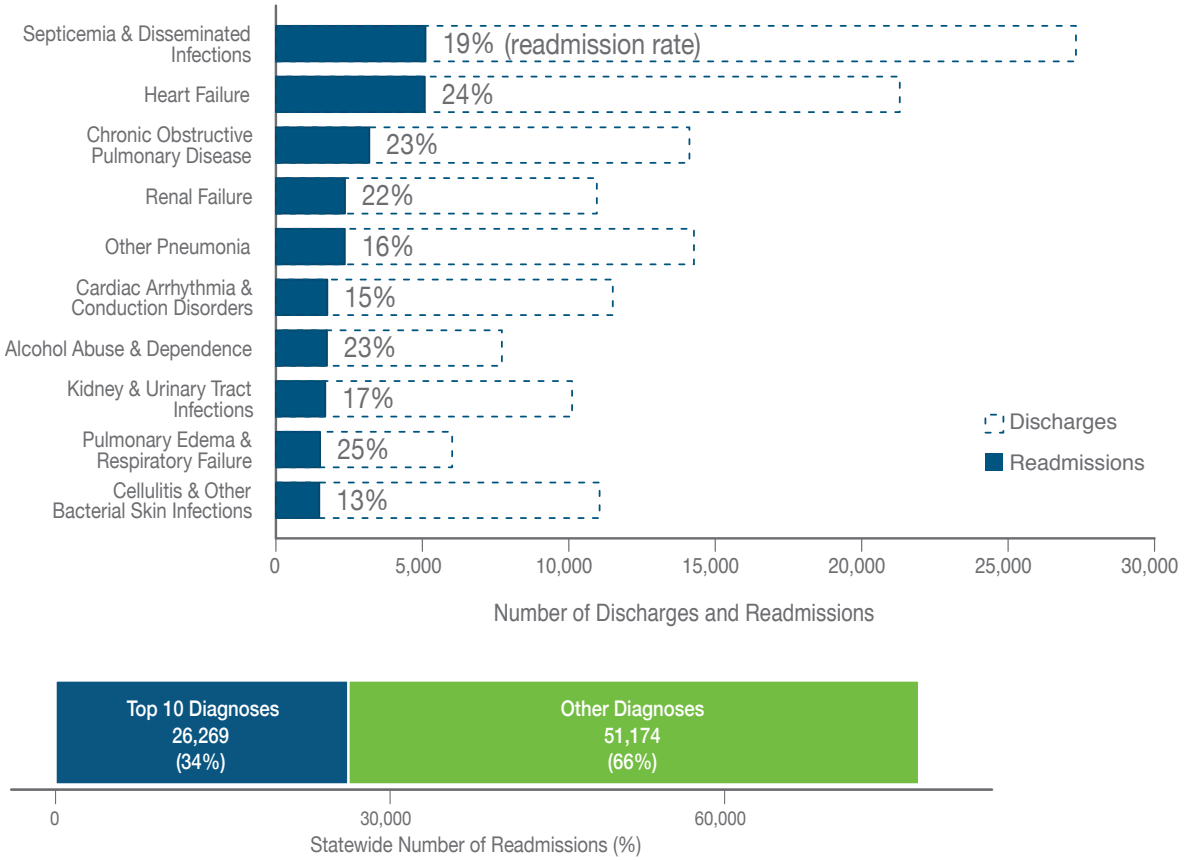
Discharge Diagnoses with the Highest Numbers of Readmissions

SFY 2016

The 10 discharge diagnoses associated with the highest numbers of subsequent readmissions are the same in 2016 as in 2015.

In 2016, sepsis surpassed heart failure as the condition associated with the highest number of readmissions (5,108 and 5,084, respectively).

These top 10 discharge diagnoses cumulatively accounted for one-third of all readmissions. While it may be important to focus readmissions reduction efforts on these high volume conditions, an exclusive focus on the top 10 diagnoses would miss a substantial portion of all readmissions.



Note: The discharge diagnosis is based on APR DRG version 30.0. Some discontinuity in trend by diagnosis may be attributed to the change in diagnostic coding from ICD-9-CM to ICD-10-CM in October 2015. See the technical appendix for details. Analyses include eligible discharges for adults with any payer, excluding discharges for obstetric or primary psychiatric care.

Data Source: Massachusetts Hospital Inpatient Discharge Database, July 2015 to June 2016.

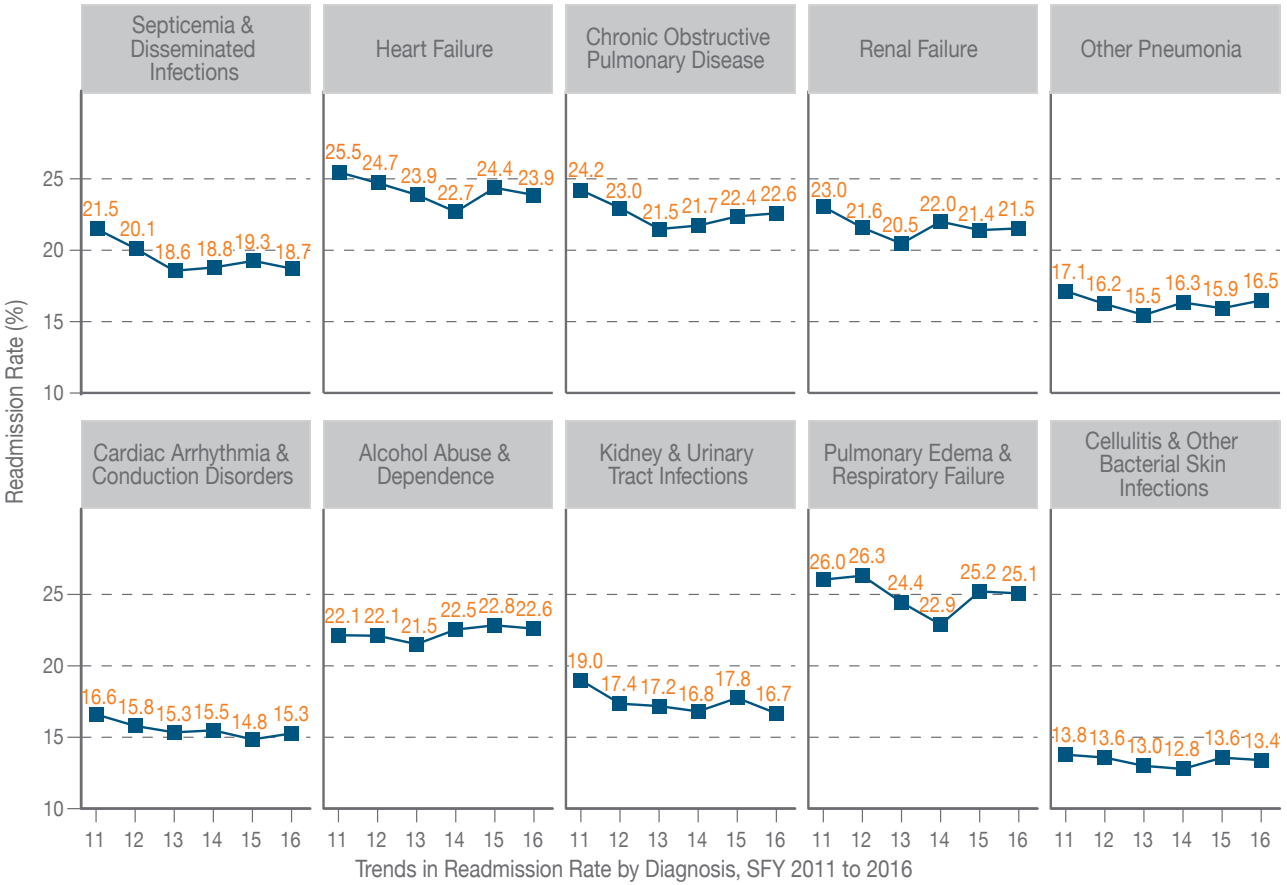
Trends in Discharge Diagnoses with the Highest Numbers of Readmissions

SFY 2011-2016

This figure shows trends over time in readmission rates for the top 10 conditions with the highest number of readmissions.

Readmission rates for several, but not all, of the diagnoses leading to the most readmissions decreased over the first few years of the six-year study period, yet have plateaued or increased in the most recent one to two years.

Notably, readmission rates for alcohol abuse and dependence (22.6%) remained high and unchanged over time.



Note: The discharge diagnosis is based on APR DRG version 30.0. Some discontinuity in trend by diagnosis may be attributed to the change in diagnostic coding from ICD-9-CM to ICD-10-CM in October 2015. See the technical appendix for details. Analyses include eligible discharges for adults with any payer, excluding discharges for obstetric or primary psychiatric care.

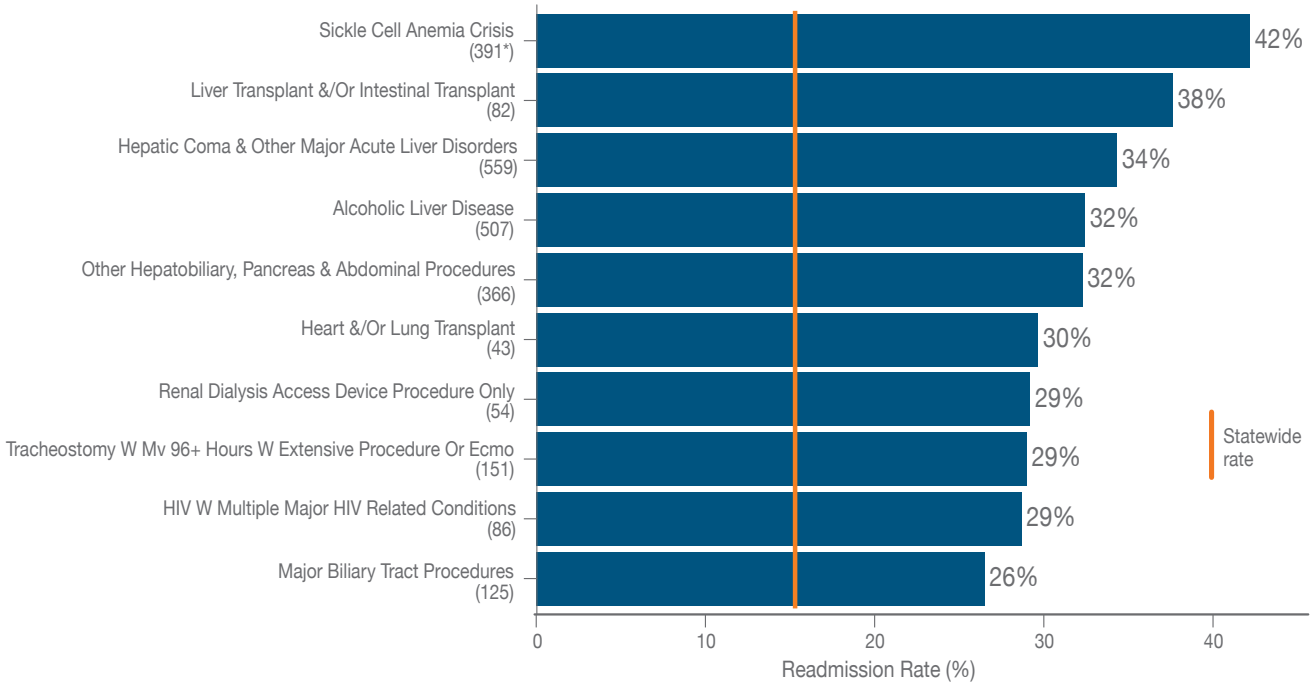
Data Source: Massachusetts Hospital Inpatient Discharge Database, July 2010 to June 2016

Discharge Diagnoses with the Highest Rates of Readmissions

SFY 2016

The figure shows the discharge diagnoses with the highest rates of readmission. As in previous years, sickle cell, liver disease, transplants, and HIV are among those with the highest rates of readmission.

While the overall numbers of readmissions from these conditions are small—they are responsible for only three percent of readmissions—patients with these diagnoses are at very high risk of readmissions.



* Number of readmissions.

Note: The discharge diagnosis is based on APR DRG version 30.0. Some discontinuity in trend by diagnosis may be attributed to the change in diagnostic coding from ICD-9-CM to ICD-10-CM in October 2015. See the technical appendix for details. Analyses include eligible discharges for adults with any payer, excluding discharges for obstetric or primary psychiatric care.

Data Source: Massachusetts Hospital Inpatient Discharge Database, July 2015 to June 2016.

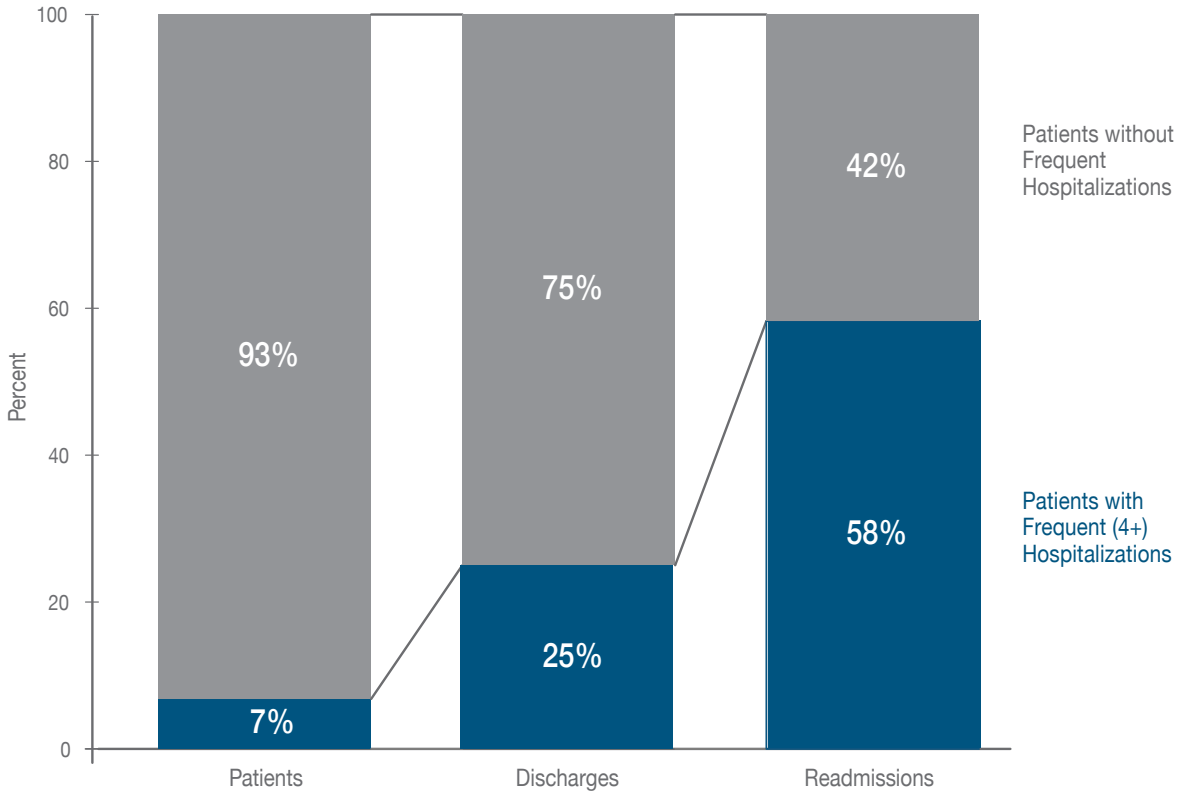
All-Payer Readmissions Among Frequently Hospitalized Patients

SFY 2014-2016

Frequently hospitalized patients are defined as those with four or more hospitalizations within a 12-month period at any point during the most recent three years (July 2013 to June 2016).

During that span of time, seven percent of hospitalized patients had four or more hospitalizations within a 12-month period. Collectively, they accounted for 25% of all hospitalizations and 58% of all readmissions in the state.

The readmission rate among frequently hospitalized patients was 37%. The readmission rate for any patient not classified as a frequently hospitalized patient (e.g., hospitalized one, two, or three times in a 12-month period) was nine percent.



Note: Analyses include eligible discharges for adults with any payer, excluding discharges for obstetric or primary psychiatric care.

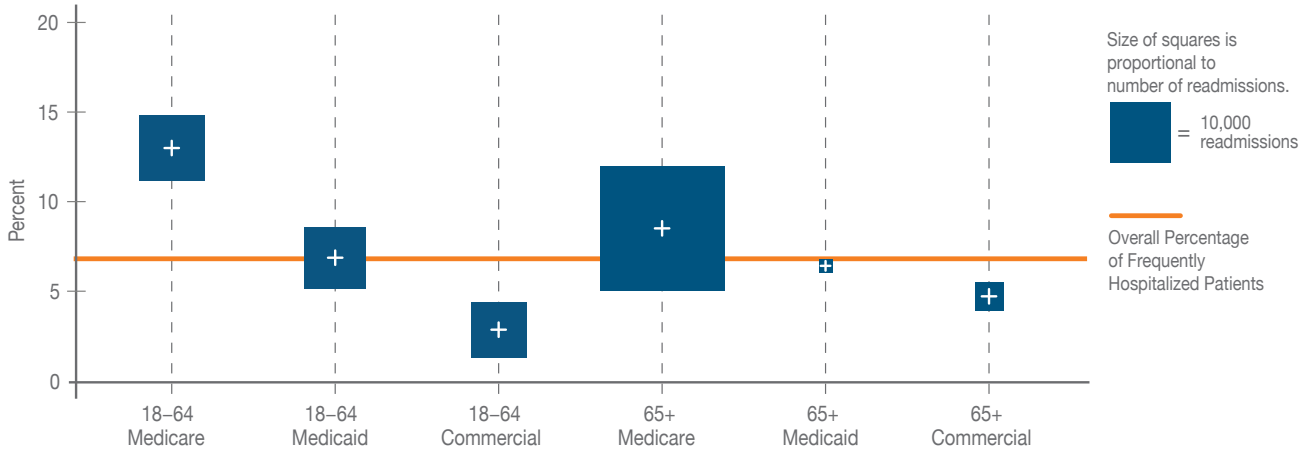
Data Source: Massachusetts Hospital Inpatient Discharge Database, July 2013 to June 2016.

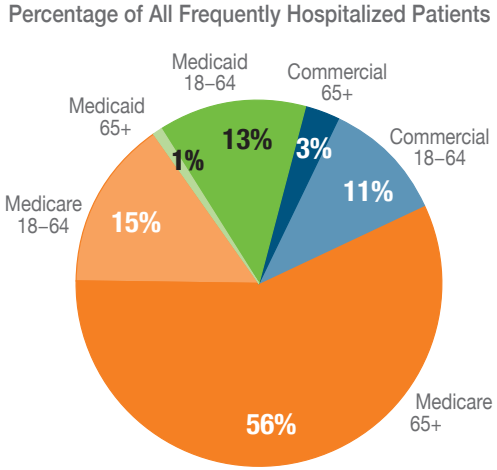
Frequently Hospitalized Patients by Age and Payer Type

SFY 2014-2016

There are important differences in the proportion of frequently hospitalized patients by age and payer. Medicare beneficiaries age 18-64 have the highest proportion of frequently hospitalized patients of any age-payer subgroup (13%).

Almost three-quarters of frequently hospitalized patients are Medicare beneficiaries. Of all frequently hospitalized patients, 85% are covered by either Medicare or Medicaid.





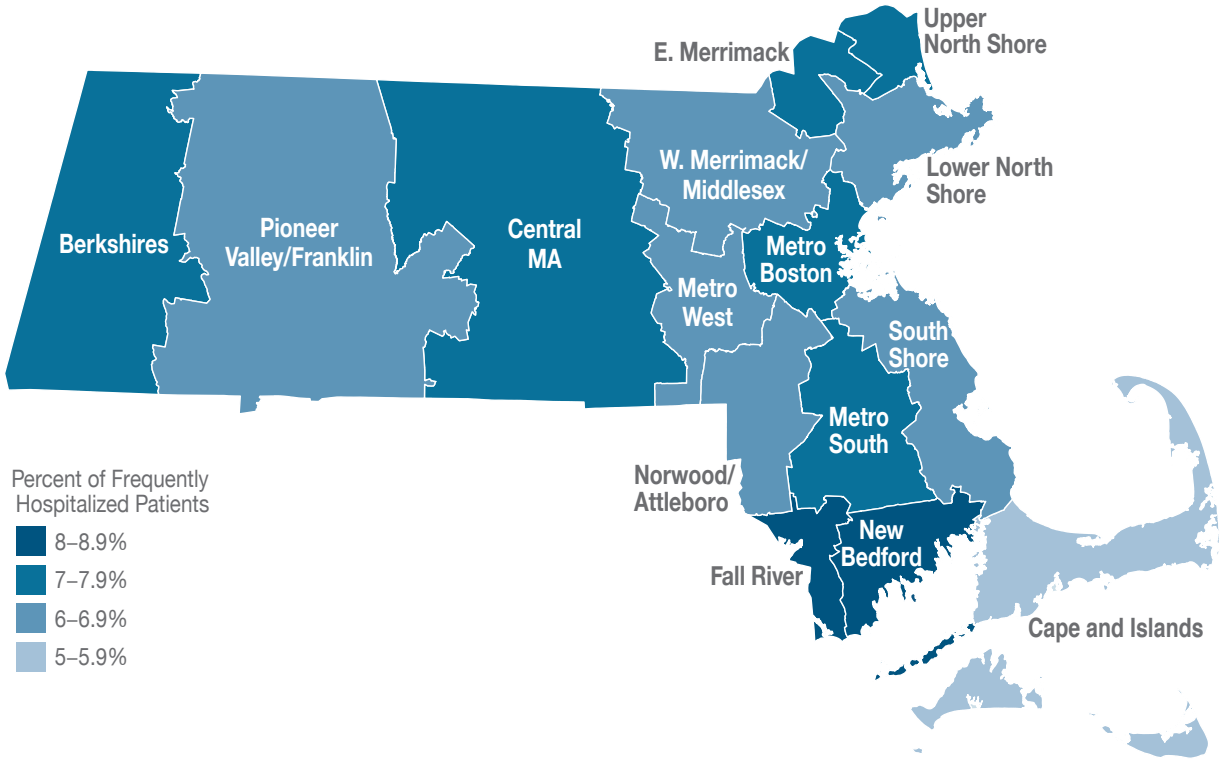
Note: The size of the squares in the top figure is proportional to the number of readmissions. Analyses include eligible discharges for adults with any payer, excluding discharges for obstetric or primary psychiatric care. Percentages do not add to 100 percent due to rounding.

Data Source: Massachusetts Hospital Inpatient Discharge Database, July 2013 to June 2016.

Percentage of Frequently Hospitalized Patients by Patient Region

SFY 2014-2016

There are notable geographic differences in the proportion of frequently hospitalized patients by the patient's region of residence. The highest proportions of frequently hospitalized patients are in Fall River and New Bedford.



Note: Analyses include eligible discharges for adults with any payer, excluding discharges for obstetric or primary psychiatric care.

Data Source: Massachusetts Hospital Inpatient Discharge Database, July 2013 to June 2016.

All-Payer Readmissions by Hospital

This section contains analyses of both observed (raw) and risk-standardized readmission rates (RSRRs) for individual hospitals and for groups of hospitals. RSRRs account for differences across hospitals in patient age, patient comorbidities, and the profile of conditions that each hospital treats. Thus, RSRRs allow for a more accurate comparison of hospitals than observed (raw) readmission rates. For details about how RSRRs are calculated, see the technical appendix.

Key Findings

- The risk-standardized readmission rates for hospitals varied from 13.6% to 18.1%. Four hospitals had RSRRs significantly above the statewide average rate of 15.9%. Only one hospital had an RSRR significantly below the statewide rate.
- Seven hospitals had consistently high RSRRs in each of the last five years, while four hospitals had consistently low RSRRs.
- Academic and teaching hospitals dominate the list of hospitals with consistently high risk-standardized readmission rates over the past five years.
- Academic Medical Centers as a group had the highest RSRR (16.5%) compared to other hospital cohorts.

READMISSIONS BY HOSPITAL

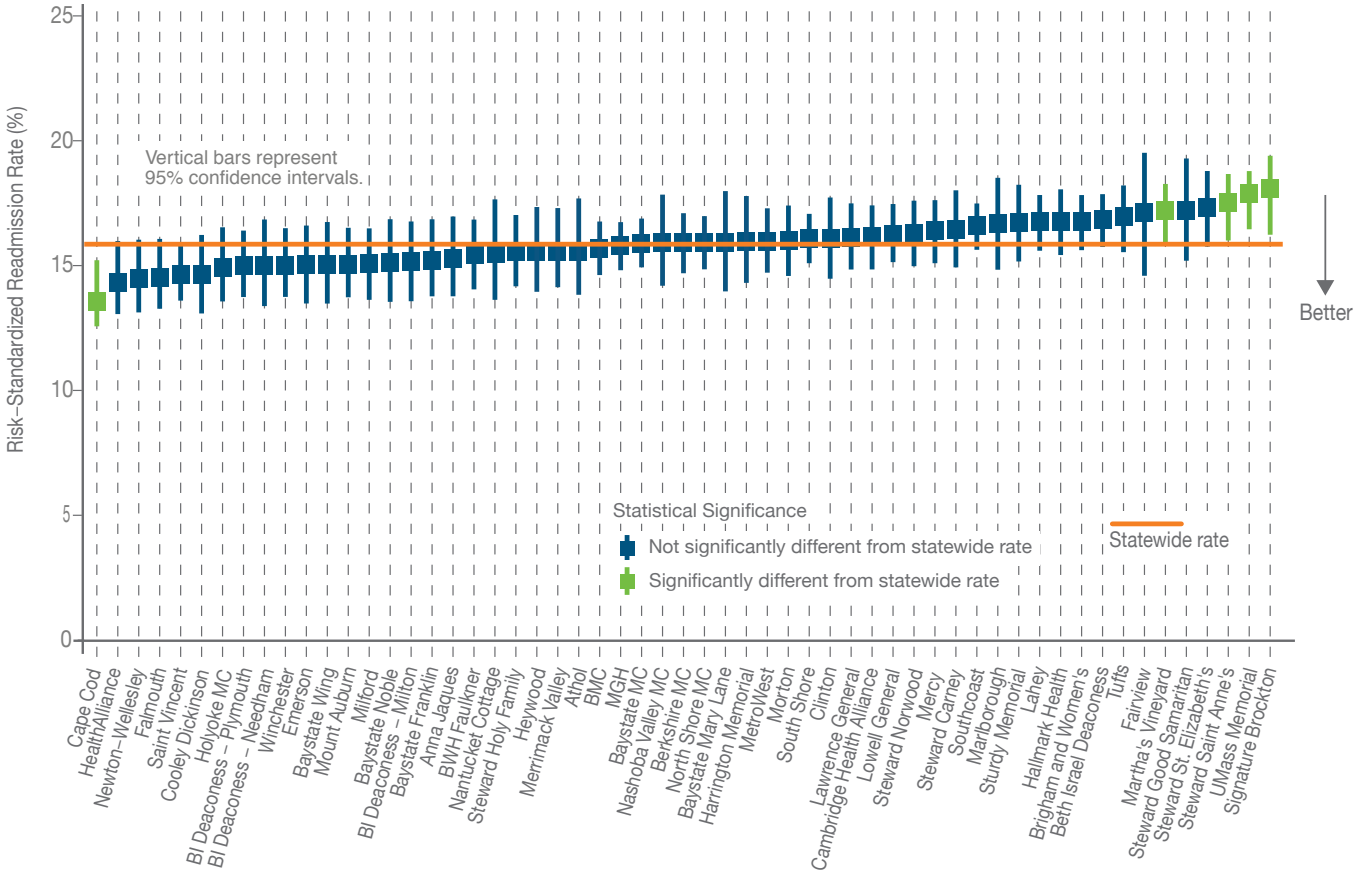
All-Payer Risk-Standardized Readmission Rates of Acute Care Hospitals

SFY 2016

Risk-standardized readmission rates allow for more accurate comparisons between hospitals by adjusting observed rates for differences among hospitals in the age and complexity of their patients and for the conditions they treat.

The hospitals' risk-standardized rates range from 13.6% for Cape Cod Hospital to 18.1% for Signature Brockton Hospital, a range of 4.5 percentage points, or a relative difference of 33%.

Four hospitals had a risk-standardized rate that was significantly higher than the statewide rate, while only one hospital had a significantly lower rate.



Note: The risk-standardized readmission rates (RSRRs) shown in this figure account for patient case mix and hospital service mix. Analyses include eligible discharges for adults with any payer, excluding discharges for obstetric or primary psychiatric care.

This figure excludes specialty hospitals (New England Baptist and the Massachusetts Eye and Ear Infirmary) and Northeast Hospital (Lahey). See the technical appendix for details.

Data Source: Massachusetts Hospital Inpatient Discharge Database, July 2015 to June 2016.

Hospitals with Consistently High or Consistently Low Risk-Standardized Readmission Rates (Over the Last Five Years)

SFY 2012-2016

Hospitals were grouped into quartiles based on their risk standardized readmission rates for each of the last five years (SFY 2012 to 2016). Those in the highest quartile had the highest readmission rates, while those in the lowest quartile had the lowest RSRRs of all Massachusetts acute care hospitals in the last five years.

Seven hospitals had consistently high RSRRs in each of the last five years, while four hospitals had consistently low rates.

Most hospitals with consistently high risk-standardized readmission rates were academic and teaching hospitals. All hospitals with consistently low rates were community hospitals.

RSRR Quartile	Hospitals	Median Risk-Standardized Readmission Rate in 2016
Highest RSRRs in each of the last five years (worse readmission rates)	Beth Israel Deaconess Medical Center Brigham and Women's Hospital Lahey Hospital & Medical Center Martha's Vineyard Hospital Steward St. Elizabeth's Medical Center Tufts Medical Center UMass Memorial Medical Center	17.0%
Lowest RSRRs in each of the last five years (better readmission rates)	Beth Israel Deaconess Hospital - Plymouth Cape Cod Hospital Emerson Hospital HealthAlliance Hospital	14.6%

Note: Analyses include eligible discharges for adults with any payer, excluding discharges for obstetric or primary psychiatric care.

Data Source: Massachusetts Hospital Inpatient Discharge Database, July 2011 to June 2016.

READMISSIONS BY HOSPITAL

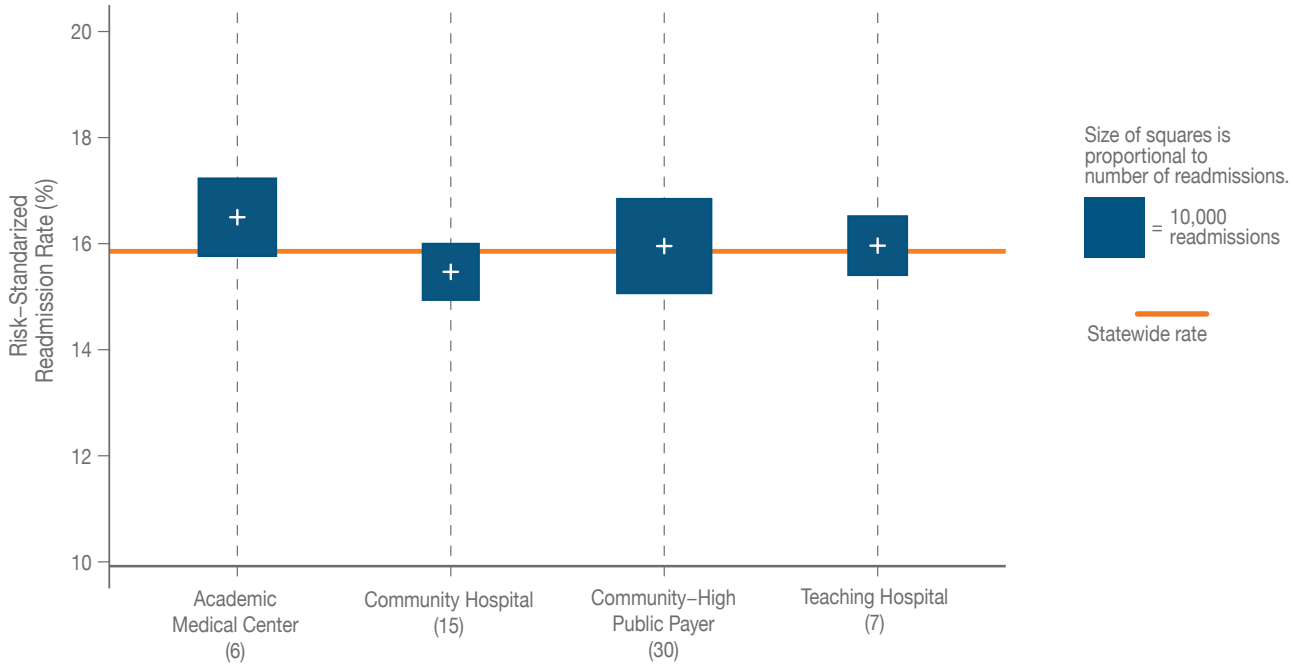
All-Payer Risk-Standardized Readmission Rates by Hospital Cohort

SFY 2016

RSRRs are presented by cohorts of similar hospitals: Academic Medical Centers, community hospitals, community-High Public Payer (HPP) hospitals, and teaching hospitals.

Community-HPP hospitals are community hospitals that have 63% or greater of Gross Patient Service Revenue attributable to Medicare, MassHealth, and other government payers, including the Health Safety Net.

Academic Medical Centers had a higher RSRR (16.5%) than other hospital cohorts. Community-HPP hospitals had the most readmissions (n=32, 298), accounting for 42% of all readmissions.



Note: The size of the squares in the top figure is proportional to the number of readmissions. Analyses include eligible discharges for adults with any payer, excluding discharges for obstetric or primary psychiatric care.

Data Source: Massachusetts Hospital Inpatient Discharge Database, July 2015 to June 2016.

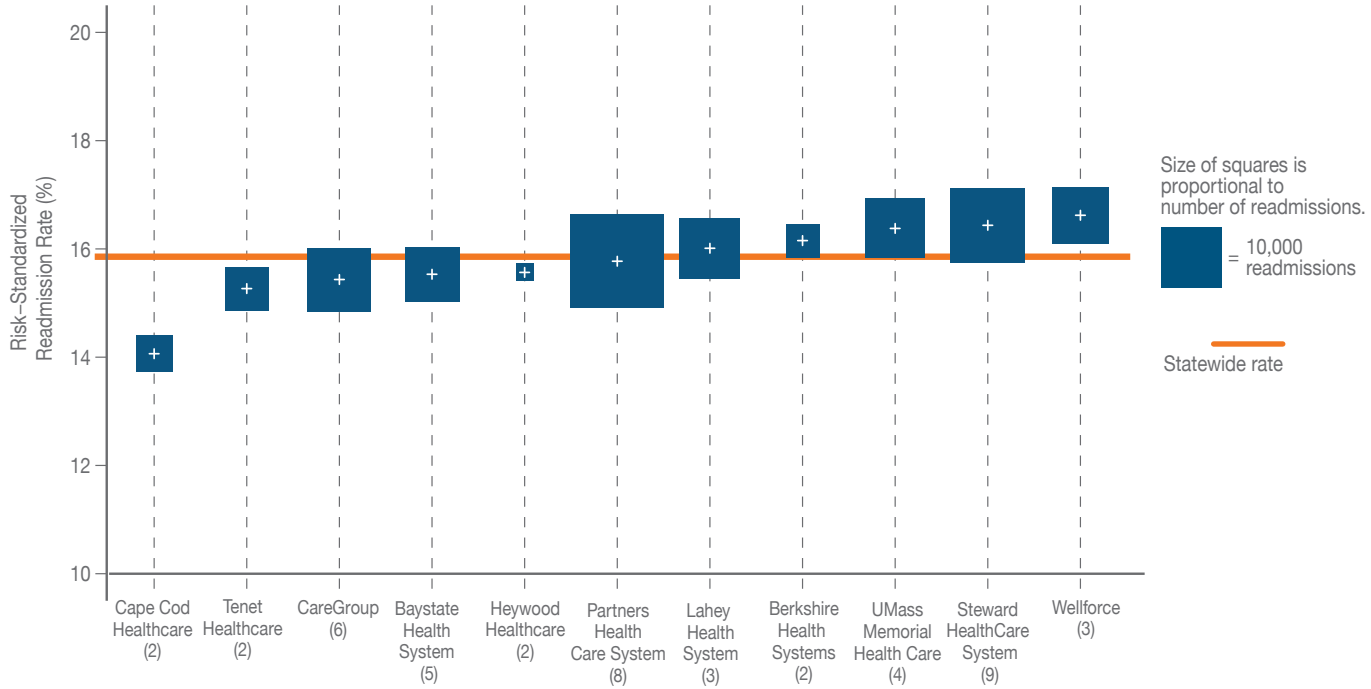
READMISSIONS BY HOSPITAL

All-Payer Risk-Standardized Readmission Rates by Hospital System

SFY 2016

RSRRs vary by hospital system from a low of 14.1% for Cape Cod Healthcare to a high of 16.6% for Wellforce. The largest hospital system—Partners Healthcare System—had a risk-standardized rate of 15.8% and accounted for 20% of all discharges and 19% of all readmissions.

See the technical appendix for a list of hospitals with their system affiliation.



Note: Analyses include eligible discharges for adults with any payer, excluding discharges for obstetric or primary psychiatric care.

Data Source: Massachusetts Hospital Inpatient Discharge Database, July 2015 to June 2016.

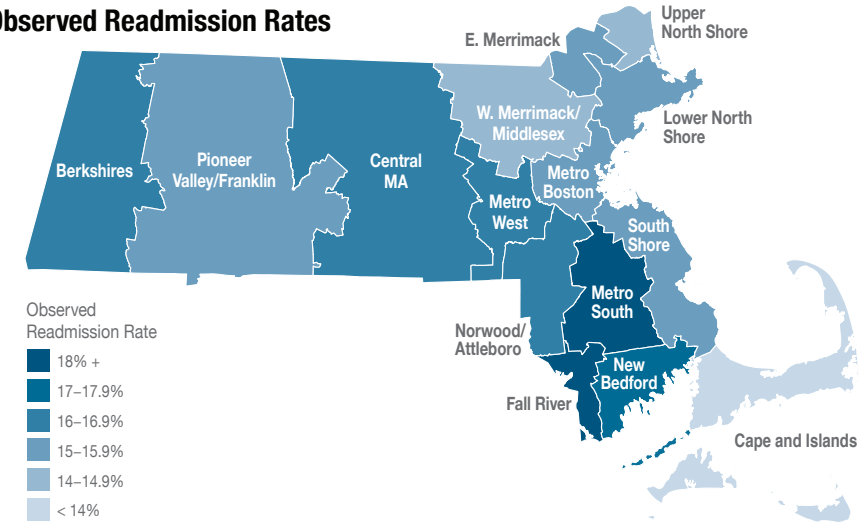
All-Payer Observed and Risk-Standardized Readmission Rates by Hospital Region

SFY 2016

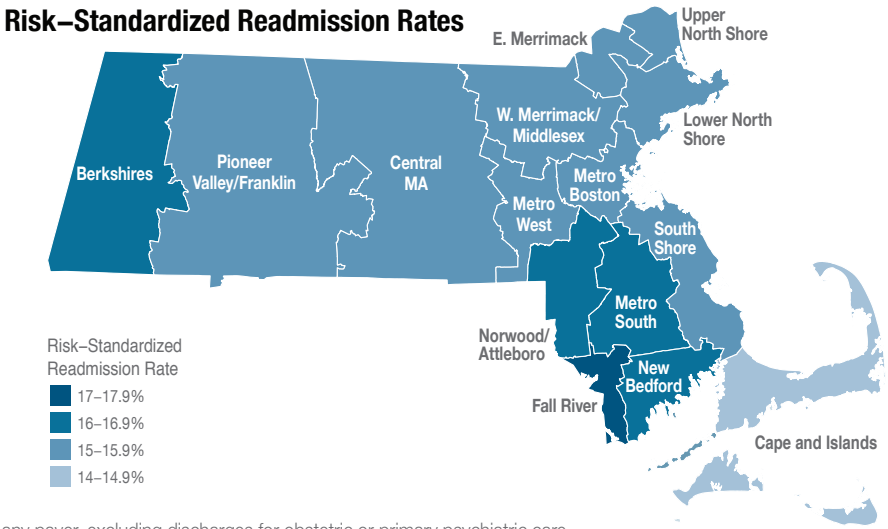
The top figure shows geographic variation in **observed readmission rates**, while the bottom figure shows variation in **risk-standardized readmission rates** that account for differences in hospitals' patient populations and the services they provide.

The observed rates vary considerably from a low of 12.8% on the Cape and Islands to 20.1% in Fall River, which is a relative difference of 57%. Once differences in patient populations and hospital service mix are accounted for by risk-standardizing (bottom figure), the geographic variation becomes smaller, ranging from 14.9% to 17.5%.

Observed Readmission Rates



Risk–Standardized Readmission Rates



Note: Analyses include eligible discharges for adults with any payer, excluding discharges for obstetric or primary psychiatric care.

Data Source: Massachusetts Hospital Inpatient Discharge Database, July 2015 to June 2016.

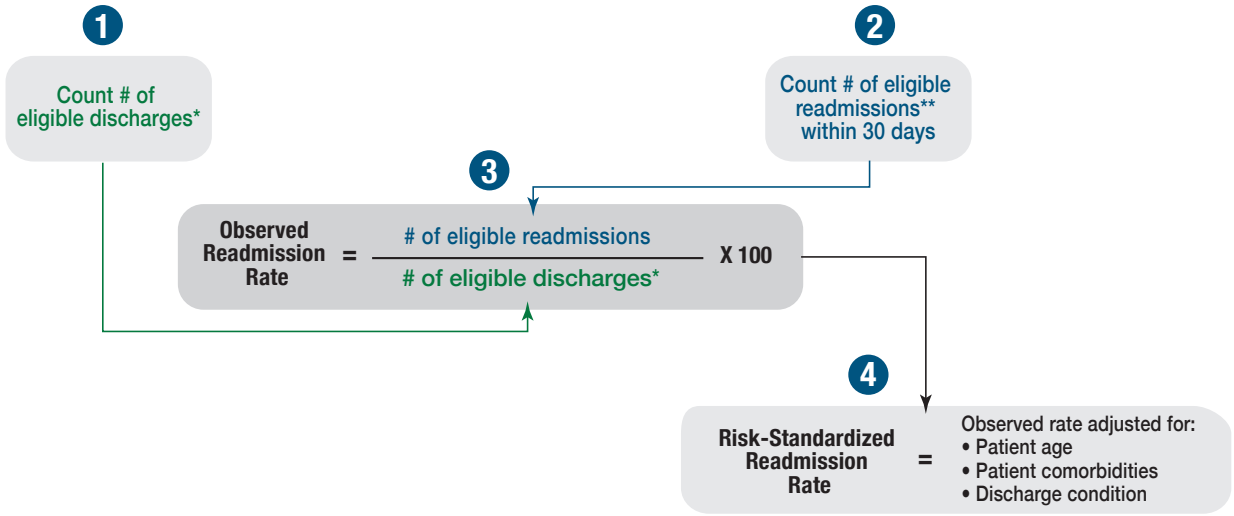
About the Readmissions Methodology

To report on all-payer readmissions in the Commonwealth, CHIA has adapted the Hospital-Wide All-Cause Unplanned 30-day Readmission Measure (NQF #1789) developed by CMS and the Yale Center for Outcomes Research and Evaluation and applied the measure to CHIA's Hospital Inpatient Discharge Database, which is collected from all non-federal acute care hospitals in Massachusetts.[10] This year's report uses version 6.0 of the CMS readmissions measure methodology (2017) that updates the planned readmissions algorithm and takes into account the transition from ICD-9-CM to ICD-10-CM diagnostic codes in October 2015.[11] Some discontinuity in trends may be attributable to the change in diagnostic coding from ICD-9-CM to ICD-10-CM.

A readmission is defined as an inpatient admission to an acute care facility in Massachusetts occurring within 30 days of discharge of an eligible index admission. All readmissions are counted except for those that are considered planned.

Readmission rates are calculated in four broad steps. First, eligible hospital discharges are defined. Second, from among this set of eligible discharges, the number of eligible readmissions within 30 days is derived. Then, the latter is divided by the former and turned into a percentage to calculate the observed (raw) readmission rate. In step four, the risk-standardized readmission rate (RSRR) is derived from the volume-weighted results of five different statistical models, one for each of the following specialty cohorts (groups of discharge condition categories or procedure categories): surgery/gynecology, general medicine, cardiorespiratory, cardiovascular, and neurology. These risk-standardized readmission rates account for differences between hospitals in patient case mix and hospital service mix.

The technical appendix has further details on the readmissions methodology, including the categories of discharges that are excluded from the readmissions analyses.



* Eligible discharges are discharges for adults during the study period from non-Federal acute-care hospitals in Massachusetts. Analyses exclude obstetric and primary psychiatric discharges. Nine further exclusions are made. See the technical appendix for further details.

** Eligible readmissions are admissions for any reason that occur within 30 days of an eligible discharge and are not planned.

Notes

1 Rau, J. "Under Trump, hospitals face same penalties embraced by Obama." Kaiser Health News (August 3, 2017). Accessed 4/5/2018. https://khn.org/news/under-trump-hospitals-face-same-penalties-embraced-by-obama/.

2 For the original measure technical report see: Horwitz, L., C. Partovian, Z. Lin, J. Herrin, J. Grady, M. Conover, J. Montague et al. "Hospital-wide all-cause unplanned readmission measure: final technical report." Centers for Medicare and Medicaid Services (2012).

3 For this report, CHIA used 2017, version 6 of the readmission measure specification. Yale New Haven Health Services Corporation/Center for Outcomes Research & Evaluation (YNHHSC/CORE). "2017 All-Cause Hospital-Wide Measure Updates and Specifications Report: Hospital-Level 30-Day Risk-Standardized Readmission Measure – Version 6.0" (March 2017). Accessed 4/5/2018. https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/HospitalQualityInits/Measure-Methodology.html.

4 Information on the Massachusetts Hospital Inpatient Discharge Database is available at http://www.chiamass.gov/case-mix-data/. The FY 2016 Hospital Inpatient Discharge Database processed by CHIA on March 7, 2018 was used for all analyses published in this year's annual statewide report. CHIA's readmission measure is based on inpatient data. Observation stay data, which is reported by acute care hospitals to CHIA in a separate data file, was not included in the readmission measure.

5 See note 1.

6 See note 2.

7 See note 3.

8 See note 4.

9 See note 3.

10 National Quality Forum, "Patient Outcomes: All-Cause Readmissions Expedited Review 2011" (July 2012). Accessed 4/5/2018. http://www.qualityforum.org/Projects/Readmissions_Endorsement_Maintenance.aspx .

11 See note 3.

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